

10/809,301

WHAT IS CLAIMED IS:

3/25/04  
①

A synchronous motor system comprising:

at least one synchronous motor that includes a field winding system;

a normal field supply unit and a standby field supply unit; and

a control unit that normally connects said normal field supply unit in circuit with said field winding system and that in response to a failure of said normal field supply unit automatically changes over said field winding system from said normal field supply unit to said standby field supply unit.

2. The synchronous motor system of claim 1, further comprising:

a sensor connected in circuit with said normal field supply unit and said synchronous motor so as to provide a signal representative of an electrical parameter, and wherein said control unit responds to said signal deviating by a predetermined amount from a reference value of said parameter to automatically change said field winding system over to said standby field supply unit.

3. The synchronous motor system of claim 1, wherein said control unit controls a normal output switching mechanism to connect and disconnect said normal field supply unit and a standby output switching mechanism to connect and disconnect said standby field supply unit to and from said field winding system.

4. The synchronous motor system of claim 1, wherein said synchronous motor is one of a plurality of synchronous motors that each have a field winding system, wherein said normal field supply unit is one of a plurality of normal field supply units, each of which is associated with a different one of said synchronous motors, wherein said control unit responds to a failure of any one of said normal field supply units to

change the field winding system of the associated synchronous motor over to the standby field supply unit.

5. A synchronous motor system comprising:

at least one synchronous motor that includes a field winding system;

a normal field supply unit, a standby field supply unit and at least one switching mechanism;

a sensor connected in circuit with said normal field supply unit and said synchronous motor so as to provide a signal representative of an electrical parameter; and

a control unit that normally operates said switching mechanism to connect said normal field supply unit in circuit with said field winding system and that, in response to said signal deviating by a predetermined amount from a reference value of said parameter, automatically operates said switching mechanism to change over said field winding system from said normal field supply unit to said standby field supply unit.

6. A method for recovery from a loss of a normal field supply unit of a synchronous motor comprising:

normally connecting said normal field supply unit in circuit with a field winding system of said synchronous motor;

detecting a failure of said normal field supply unit; and

in response to said detected failure, automatically changing over said field winding system from said field normal supply unit to a standby field supply unit.

7. The method of claim 6, wherein said failure corresponds to a predetermined deviation from a reference value of a signal that is sensed from said synchronous motor field winding system.

8. The method of claim 6, wherein the steps of connecting, detecting and automatically changing over are performed for each of a plurality of synchronous motors, and wherein said standby field unit is shared by all of said synchronous motors.